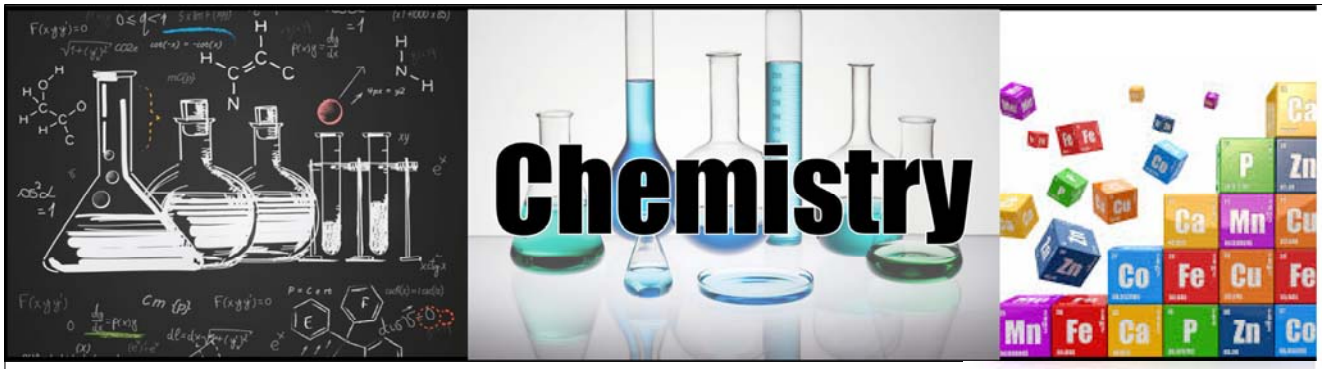
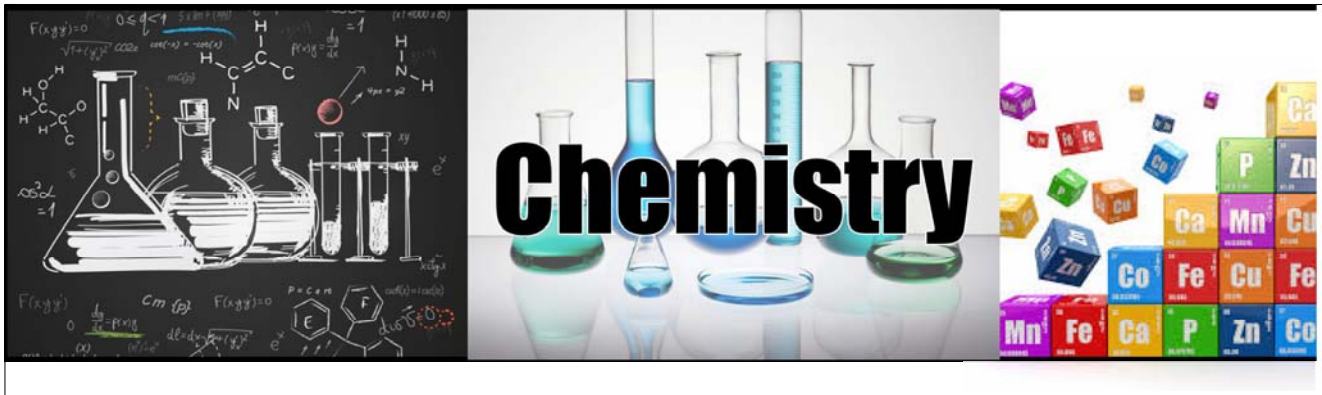


Lesson 7: Covalent Molecular Compounds

- 2 or more non-metals bonded together
- Can be different (CH_3OH) or the same (O_2)
- Independent units made up of fixed number of atoms bonded together
- Can be solid, liquid or gas
- Atoms are joined together with covalent bonds, atoms share electrons
- Electrons are not transferred from one atom to another
- Examples of covalent bonds are
  - Water H_2O
  - Ammonia NH_3
  - Sugar $C_{12}H_{22}O_{11}$

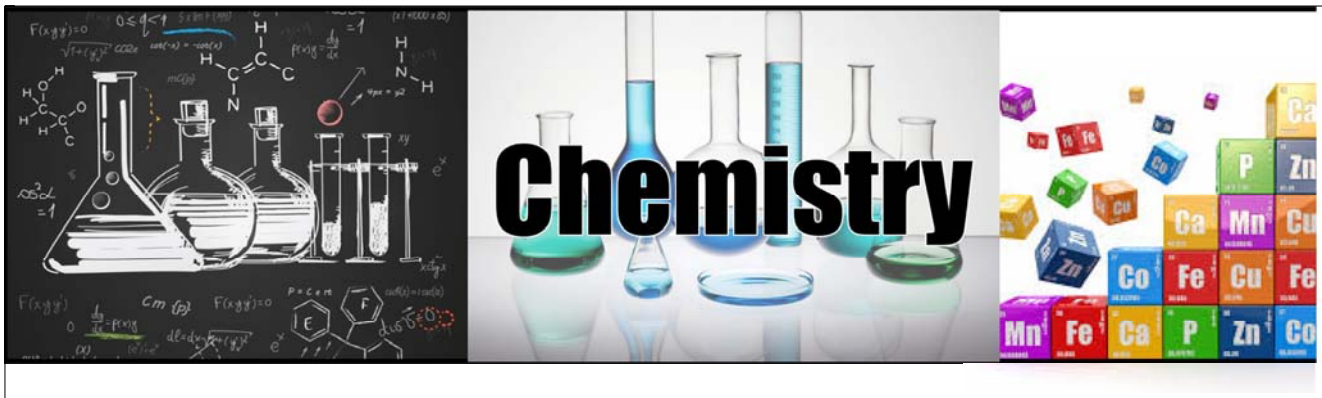


Monatomic	$C_{(s)}$ Noble gases All metals
Diatomic	$H_{2(g)}$ $N_{2(g)}$ $O_{2(g)}$ $F_{2(g)}$ $Cl_{2(g)}$ $Br_{2(l)}$ $I_{2(s)}$ } when by themselves
Polyatomic	$O_{3(g)}$(ozone) $P_{4(s)}$ $S_{8(s)}$

Naming Molecules without Hydrogen

- Greek prefixes are used to indicate the amount of each element present in a compound
- First element name remains the same, second element ends in *-ide*
- Add prefixes to both elements
- Exception: we do NOT put *mono* on the first element

Number	1	2	3	4	5	6	7	8	9	10
Prefix	mono	di	tri	tetra	penta	hexa	hepta	octa	nona	deca



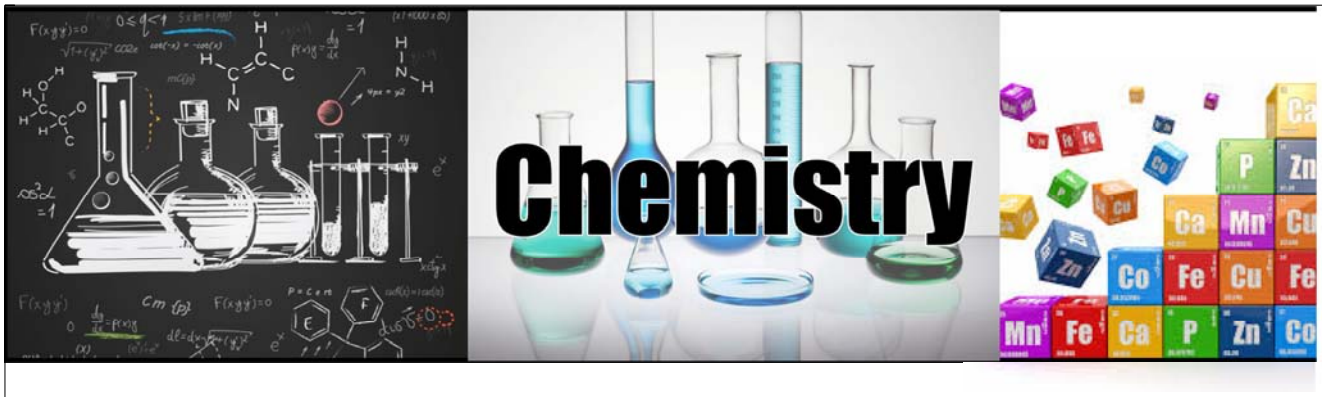
Steps	$N_2O_{(g)}$	$PBr_{3(g)}$
1. Name first element	nitrogen	phosphorus
2. Name second element "ide"	oxide	bromide
3. Add prefixes	dinitrogen monoxide	phosphorus tribromide

Ex.) Name the following:

a) CBr_4 carbon tetrabromide

b) SO_2 sulfur dioxide

c) P_2O_5 diphosphorus pentaoxide



Molecular Compounds that contain Hydrogen

- Many compounds containing hydrogen have simply been given names
- See page 5 in the data booklet

IUPAC Name	Formula and State at 25°C
Water	$H_2O_{(l)}$
Hydrogen peroxide	$H_2O_{2(l)}$
Ammonia	$NH_{3(g)}$
Sucrose	$C_{12}H_{22}O_{11(s)}$
Methane	$CH_{4(g)}$
Propane	$C_3H_{8(g)}$
Methanol	$CH_3OH_{(l)}$
Ethanol	$C_2H_5OH_{(l)}$
Hydrogen Sulfide	$H_2S_{(g)}$

Worksheet